



City and County of San Francisco

Planning Department

SUTRO TOWER DIGITAL TELEVISION (DTV)

DRAFT ENVIRONMENTAL IMPACT REPORT

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INTRODUCTION

Sutro Tower is an existing 977-foot tall steel structure/tower which includes antennas for ten television stations and four FM radio stations. Visible from most areas of San Francisco, the Tower is located on an approximately 4-acre parcel on the east peak of Mount Sutro in central San Francisco.

This Draft EIR examines the potential environmental effects of a proposed project to install Digital Television (DTV) antennas onto Sutro Tower. A new DTV antenna system able to accommodate the 10 television stations that broadcast from Sutro Tower would be attached to a new 125 foot long beam, which would extend down from a location near the top of Sutro Tower. The project is being proposed to comply with the Federal Communications Commission (FCC) mandate that all television broadcast stations in the United States implement DTV signal broadcasting.

The current FCC deadline for beginning DTV signal broadcasts in the Bay Area is October, 1998. FCC rules also specify that unless otherwise exempted, DTV broadcasts must be from a location no greater than five kilometers from the site of the existing National Television Systems Committee (NTSC) broadcasts (Sutro Tower), and that the antennas should generally be at the most central point, at the highest elevation available. If the proposed project is approved there would be an overlap period tentatively set for 9 years during which both DTV and the existing NTSC television signals would be broadcast from Sutro Tower. Thereafter, the NTSC signal would be terminated and only DTV signals would be transmitted.

The main area of controversy surrounding the proposed project involves the potential for adverse health effects from radiofrequency radiation (RFR). Sutro Tower presently emits RFR from NTSC television signal broadcasts. During the period of overlap, when both DTV and NTSC signals would be broadcast, RFR would increase above existing levels. After the NTSC signal broadcasts are terminated, RFR would drop below existing levels.

[NOTE: A glossary of definitions and acronyms used in this EIR is included as Section 9.0, below.]

The proposed project would emit electromagnetic waves in the frequency range of 500 - 734 megahertz. These wavelengths are millions of times shorter than those generated by electric power lines. Accordingly, the interactions with biological bodies differ between exposure to RFR and exposure to electric and magnetic fields generated by power line frequencies.

A Technical Report on the Biological Effects of Radiofrequency Radiation and Possible Health Effects of RFR on Humans from Sutro Tower DTV Broadcasts has been prepared and is included as Appendix B to the EIR. This technical report was authored by two experts in the field of RFR and additional contributions were made by another expert. The report was peer reviewed by the San Francisco Department of Public Health (DPH) and an independent expert working as a consultant to DPH. The general conclusions of this technical report have been summarized in the main body of the EIR.

The technical report presents information on a representative sampling of the large number of studies that have been conducted on the potential biological effects of RFR. Included in the report are analyses of a variety of potential adverse effects, based on studies of humans, other animals, and animal cells and tissues. Some past researchers have published reports concluding that there is the potential for adverse health effects from RFR. In reviewing these past studies, the technical report for this EIR concludes that either 1) the adverse effects identified were the result of a thermal effect (a hazardous increase in body or cell temperature) which resulted from RFR levels greater than those that would be generated by the proposed project; or 2) taken collectively, there is little or no reliable scientific evidence to indicate that the proposed project would have adverse health effects, and the substantial weight of reliable scientific evidence indicates that there would not be any adverse effects from RFR levels at or below those permitted in the *FCC 96 Guidelines*. The proposed project, during the period of overlapping signal transmission, would emit RFR up to a maximum of about 14 percent of the levels permitted by the *FCC 96 Guidelines*.

While concluding that the results of many investigations provides confidence that exposure to RFR at or below the levels prescribed in the *FCC 96 Guidelines* is unlikely to be harmful, the technical report acknowledges that some of the mechanisms of interaction of RFR with various biological entities are not fully understood, and life processes are complex. Even though the report cautions that it is not scientifically possible to guarantee absolutely that exposure to RFR at relatively low levels will not result in the appearance of harmful effects for many in the

future, the substantial weight of reliable scientific evidence indicates that there would not be any adverse health effects from the proposed project.

The remainder of this Summary section provides a synopsis of the information contained in the main body of the EIR.

1.1 PROJECT DESCRIPTION

Sutro Tower is an existing 977-foot tall steel structure/tower which includes antennas for ten television stations and four FM radio stations. The television stations currently broadcast National Television Systems Committee (NTSC) signals.

The project would install a new antenna system able to accommodate a second set of broadcasts from the ten existing television stations on Sutro Tower. A new 125-foot long beam about 3 feet wide by 3 feet deep would be added to the tower at Level 6, about 755 feet above ground level, and extend down from that point (see Figure 4, page 2-9). The ten antennas would be attached to this one new beam. The beam would be brought to the site by truck, already manufactured, in three sections. Each of the three sections would be hoisted up the tower and installed in place. No power impact tools are anticipated to be necessary for the installation process.

The second set of antennas would broadcast Digital Television (DTV) signals, as required by the Federal Communications Commission (FCC), from Sutro Tower in addition to the NTSC signals until such time as the FCC required termination of the NTSC signals (currently set at May 2006). Rather than the analog signals currently used by the broadcast industry, DTV codes the signal information into a digital system, similar to that used in a computer. The DTV system can carry the same type of programming as seen on TV today, and could also carry additional data services. DTV would also allow stations to send multiple programs simultaneously on a single channel. This would mean that additional signals from 500 to 734 megahertz (MHz) radiofrequency (RF) range would be broadcast from Sutro Tower during the period of overlapping DTV and NTSC broadcasts. After termination of NTSC signals, the DTV signals would replace the existing NTSC signals and the RFR emitted from Sutro Tower would drop below existing levels.

In addition to the regular radiofrequency emissions from Sutro Tower, most of the stations have "stand-by" auxiliary antennas on the tower. These auxiliary antennas can be used to broadcast TV signals if the regular antennas are unable to operate. Currently these antennas are used on an infrequent basis when work needs to be done on the main antennas. They would continue to be used in this fashion during the period of overlapping DTV and NTSC broadcasts. The auxiliary antennas are mounted at the first rung of Sutro Tower (also referred to as Level 2, see Figure 3, page 2-5) and generally emit less power than the main antennas, although three auxiliary antennas emit more power.

No demolition would occur on site.

1.2 MAIN ENVIRONMENTAL EFFECTS

Public Health Effects

Sutro Tower emits radiofrequency radiation, and concern exists about health effects from exposure to various forms of radiation. Conclusions presented herein regarding health effects of radiofrequency radiation are based upon a Technical Report (included in Appendix B) by experts who reviewed the published studies and literature to ascertain potential health effects on humans and other animals. This report was peer reviewed by both the San Francisco Department of Public Health and an independent expert retained by the Health Department.

The 1992 *ANSI/IEEE Guidelines* first established a threshold level of RFR exposure at which it was generally agreed that adverse health effects, including thermal effects, could occur. A safety factor of 50 times (i.e., divide the lowest established level known to cause an adverse effect by 50) was established for uncontrolled environments (public exposure). These guidelines were subsequently adopted into the *FCC 96 Guidelines*.

The Technical Report, the Department of Public Health, and an independent expert all agree that the substantial weight of reliable scientific evidence indicates that human exposure at or below levels of RFR prescribed by the *FCC 96 Guidelines* would not be harmful to human health. While substantial weight of scientific research has indicted that no adverse health effects would result at low power levels (i.e., less than the *FCC 96 Guidelines*), some findings have been contrary.

The Appendix B Technical Report includes an in-depth analysis of a variety of potential adverse effects, based on studies of humans, other animals, and animal cells and tissues. More specifically, the technical report examined studies on eye damage in animals; auditory effects in animals; mutagenesis, cytogenetic effects and carcinogenesis; teratogenesis; nervous system; immunology and hematology; physiology and biochemistry; behavior and learning; RFR and drugs; and cellular and subcellular effects.

The technical report concluded that in spite of the findings of particular studies to the contrary, the substantial weight of reliable scientific evidence indicates that there would not be any adverse health effect from the maximum RFR levels that would result from the proposed project. In reviewing these past studies, the technical report for this EIR concludes that either 1) the adverse effects identified were the result of a thermal effect (a hazardous increase in body or cell temperature) which resulted from RFR levels greater than those that would be generated by the proposed project; or 2) taken collectively, there is little or no reliable scientific evidence to indicate that the proposed project would have adverse health effects, and the substantial weight of reliable scientific evidence indicates that there would not be any adverse effects from RFR levels at or below those permitted in the *FCC 96 Guidelines*.

The closest residence is about 250 feet away from the base of the tower, and over 800 feet from the closest antenna. The closest public roadway is about 150 feet from the tower. The highest measured and calculated levels of existing public exposure to RFR from Sutro Tower, at a sensitive receptor (residence) is at Farview Court, approximately one block from the tower. The calculated level of 0.025 milliwatts per square centimeter (mW/cm^2) is at about 12.7 percent of the *FCC 96 Guidelines*. Other sensitive receptors live about one block or more from the tower. The average existing radiofrequency level at a distance of 1 kilometer (about ten blocks) of Sutro Tower is $0.0034 \text{ mW}/\text{cm}^2$, which is about 1.7 percent of the *FCC 96 Guidelines* for public exposure.

With the addition of DTV antennas, the maximum exposures from broadcast emissions from the proposed project at the closest sensitive receptor would be at about $0.029 \text{ mW}/\text{cm}^2$ or 14.3 percent of the allowable maximum of the *FCC 96 Guidelines*. These levels in turn drop off rapidly with increased distance from Sutro Tower. Once the NTSC signals are no longer broadcast, then the power densities would drop below existing power levels. Experimental

data indicate that relatively low-level RFR exposure is not cumulative. At the levels due to project implementation, adverse health effects are not anticipated.

RFR would not be expected to impact a person from the general population wearing a pacemaker due to distance from the source and the types of RFR broadcast. Regarding types of RFR emitted, public exposure would be at a fraction of the federal safety standard and would not lead to heat-related (thermal) RFR effects.

Worker Safety Effects

The proposed DTV antennas present the same potential health and safety impacts that currently exist at Sutro Tower. No differences in hazards associated with radio or NTSC television broadcasts would occur with project implementation, although more workers could be exposed to hazards and/or existing workers could be exposed to hazards with greater frequency, if any additional maintenance was required related to the new antennas.

Visual Quality Effects

The project would provide an additional antenna system between about 630 and 755 feet above the base of the tower. These new DTV antennas would be located between the north and south legs on the east face of the Sutro Tower structure itself, and would not protrude from the tower on any facade. While the existing tower may be considered by some to be visually intrusive, the proposed antennas would not be generally noticeable in the context of the tower's details such as cross-bracing, cable ties, trusses, and existing antennas.

1.3 MITIGATION MEASURES

Although no mitigation measures would be necessary because no potentially significant effects have been identified, some actions are required by law which would serve to reduce impacts. These include: complying with the *FCC 96 Guidelines*, Federal Communications Commission (FCC) and Cal/OSHA limits for personnel exposure to RFR, and CAL/OSHA worker safety regulations.

1.4 ALTERNATIVES

No Project Alternative

This alternative would entail no immediate change to the site or to Sutro Tower. If the No Project Alternative was implemented, none of the impacts associated with the project would occur. Sutro Tower would continue as a visible presence in the neighborhood. It would continue to operate and to emit RFR from television broadcasts into the vicinity of the Tower, until such time as the FCC decides to discontinue NTSC television broadcast signals.

The possibility exists that once the NTSC television broadcasts cease, Sutro Tower would be utilized for other permitted communication uses or would shut down. Effects from demolishing the tower may then result.

On-site impacts would temporarily be less at Sutro Tower if the DTV antennas were not added to the tower. Temporary construction noise impacts would not occur on the Sutro Tower site, nor would construction impacts due to traffic and air quality. Temporary construction jobs for installing the antenna would also not occur.

Visual changes to the tower would not occur with this alternative. RFR emissions would be less with this alternative and would be completely eliminated if the tower was demolished. If Sutro Tower was reutilized for other permitted communications, then RFR emissions at these different frequency ranges would be emitted from the tower.

Off-Site Alternatives

Due to the nature of radiofrequency, antennas transmitting television signals need to be sited at relatively high locations. Television signals follow a virtual line-of-sight path from broadcasting antenna to television receiver. These signals do not readily bend around solid obstacles. Thus any hills or highrise building between the antennas and the receivers (television sets) would impair and possibly block reception of the broadcast signals.

Television antennas tend to be located at the highest natural site close to the city of license so that the television broadcasts can be received by television sets. The FCC requires that a

certain level of service be maintained in the city of license (FCC Rules, Section 73.685(a)). No obstructions may exist in the path of the broadcast signal, and service to the city must be by direct signal. Relays or booster facilities may not be used to achieve the required level of service.

In the San Francisco Bay Area, three of the highest sites are currently used for television broadcasting: Sutro Tower, San Bruno Mountain, and Mount Diablo. In addition to a relatively high natural site, towers are usually constructed from which the television signals can be broadcast. The towers help to insure that receivers (televisions) would not have reception blocked due to hills or highrise buildings. Signals broadcast from Sutro Tower, San Bruno Mountain, and Mount Diablo are not interchangeable because of their distance from each other and the cities of license.

New DTV channel allotment rules specify that each station's DTV transmitting antenna location must be within 5 kilometers of the existing NTSC transmitter sites (FCC Rules, Rules, Section 73.622(d)(1), 47 C.F.R. Section 73.622). Exemptions to this rule may be used for alternatives located farther than 5 kilometers, if an engineering study can show that there will be no additional interference to any other station.

Mount Diablo would not be an acceptable alternative location for the DTV antennas because Sutro Tower stations cannot broadcast from that site without interfering with signals from some Sacramento stations and thereby may violate FCC non-interference requirements. In addition, Mount Diablo would not be an acceptable alternate location for the DTV antennas because Oakland and other East Bay cities would be shadowed from direct reception of signals broadcast from Mount Diablo.

Antennas on San Bruno Mountain could not adequately broadcast NTSC signals to all neighborhoods of San Francisco. Thus NTSC broadcasts would necessarily continue from Mount Sutro under this alternative, while DTV signals would be broadcast from San Bruno Mountain. This could entail each of the television stations to have additional personnel and two sets of test equipment monitoring the broadcasts to each other, one for each location during the 9-year period of broadcasting both DTV and NTSC signals.

If an off-site alternative was constructed and implemented, impacts identified for the proposed project at Sutro Tower would instead occur at the alternative site location. For example, on San Bruno Mountain, new towers would need to be constructed, while at Sutro Tower the existing tower could remain in use.

All on-site construction-related impacts identified for the Sutro Tower area under the proposed project would instead be experienced at the alternative location on San Bruno Mountain. Temporary installation noise impacts would not occur on the Sutro Tower site, nor would installation impacts due to traffic and air quality. Temporary construction jobs in San Francisco installing the antenna would also not occur.

No impacts would occur due to operation of either this alternative or the project on land use, population, transportation, noise, air quality, public services and utilities, biology, water, hazardous materials, energy, geology, seismicity and soils, cultural resources, and growth inducing effects. Visual changes to the tower would not occur with this alternative.

Near the likely site of a new tower at San Bruno the maximum RFR levels would rise from about 22.7 to 34.4 percent of the *FCC 96 Guidelines*, an increase of 11.7 percent of the guidelines. This contrasts with the increase in maximum RFR levels near Sutro Tower from 12.7 to 14.3 percent of the *FCC 96 Guidelines*, an increase of 1.6 percent of the guidelines. San Bruno Mountain is surrounded by public open space, and residential land uses are not located as close as for Sutro Tower.

Other impacts associated with tower construction and/or antenna installation would also occur on the alternative site. These impacts would be temporary, and would likely fall within the range of impacts typically associated with small- to medium-scale construction projects. Long-term visual impacts would not be substantial since other towers and antennas already existing on San Bruno Mountain.

PROJECT DESCRIPTION

2.1 PROJECT SPONSOR OBJECTIVES

Sutro Tower, Inc. is the owner of the Sutro Tower communications facility located in San Francisco. Sutro Tower, Inc. has operated this facility continuously since the initial construction under a Conditional Use authorization issued by the City and County of San Francisco on March 10, 1966.

The Federal Communications Commission (FCC) determined that the Sutro Tower location provides the maximum television broadcast coverage for home reception in the San Francisco area due to a high and central location, and was therefore designated as the prime facility for television broadcasting for San Francisco stations. Sutro Tower, Inc. was accordingly organized as a cooperative venture between its four San Francisco television station owners and is required by FCC authorization to make its facility optimally accessible for such use consistent with signal non-interference and other technical, engineering and practical constraints.

The fundamental objective of Sutro Tower, Inc. as project sponsor is to comply with the FCC's legal mandate for all commercial television broadcast stations in the United States, including all such stations currently broadcasting from Sutro Tower, to implement Digital Television (DTV) signal transmission in accordance with FCC deadlines (scheduled for October 1998) for this federally designated next generation of technology for television broadcasting. This fundamental objective includes a number of elements including the following:

1. Enabling Sutro Tower, Inc. and its commercial broadcast television station users, and its two noncommercial broadcast television users (KQED-TV 9 and KMTP-TV 32) to:

NOTE: A glossary with definitions and acronyms used in this EIR is included below as Section 9.0.

2.0 Project Description

- (i) comply with the DTV implementation standards, technical specifications and timetables (scheduled for October 1998) established in the FCC's long-running proceeding for this purpose (FCC Mass Media Docket No. 87-268);
 - (ii) provide optimal broadcast television signal placement for San Francisco and surrounding Bay Area communities; and
 - (iii) provide maximum community broadcast service from the television stations at Sutro Tower, by maximum household signal reception or "reach," consistent with FCC Rules (47 CFR Sections 73.682-73.687).
- 2. Maintain minimum broadcast signal interference with and separations between other television and non-television broadcasters and communications service providers, in accordance with the FCC's Rules (47 CFR Sections 73.610-73.612);
- 3. Consistent with such signal non-interference requirements, utilize a joint stack antenna configuration or other technical antenna configuration involving a single source location for as many of the existing Sutro Tower television broadcast signals as possible for DTV service;
- 4. Maintain compliance with applicable health and safety laws and standards for television broadcasting, including the human exposure standards for radiofrequency radiation (RFR);
- 5. Maintain future flexibility for the accommodation of technical improvements in broadcast communications technology, avoiding technical constraints that would limit compliance with or implementation of future regulatory and technological development; and
- 6. Maintain the signal non-interference and operational efficiency characteristics of a single-site broadcast location for the existing standard-technology ("NTSC") broadcast signals and the coming DTV broadcast implementation.

2.2 PROJECT LOCATION

Sutro Tower is an existing 977-foot tall steel structure/tower which includes antennas for ten television stations and four FM radio stations. Sutro Tower is located on an approximate four-acre parcel on the east peak of Mount Sutro. Figure 1 shows the site location. Low density residential uses generally surround the project site. The project site is about 3,000 feet south of Kezar Stadium and Golden Gate Park, and south of the University of California at San Francisco.

The project site is on Lot 3 of Assessor's Block 2724. Refer to Figure 2 for the site plan. Access to the project site is from La Avanzada Street. The site is roughly surrounded by Dellbrook Avenue, Clarendon Drive, Panorama Drive, Farview Court, and Clairview Court.

Mount Sutro is one of the highest points in San Francisco with an elevation of 908 feet. The site is the most feasible-site in San Francisco from which radio and television signals can be broadcast without shadowing from other higher locations. (Hammett & Edison, 1993) The 977 foot-tall tower is located at an elevation of about 834 feet above sea level. The total height to the top of the tower above sea level is about 1,811 feet.

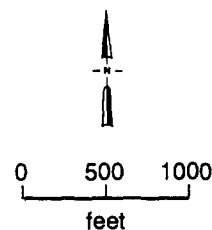
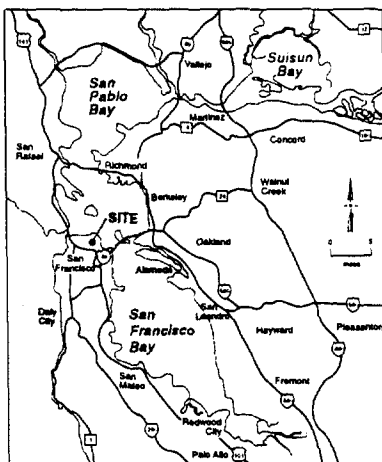
2.3 PROJECT CHARACTERISTICS

Sutro Tower has antennas for ten television stations and four FM radio stations. Figure 3 shows where the existing antennas are located on Sutro Tower. The television stations currently broadcast National Television Standards Committee (NTSC) signals. Please refer to Table 1 for the frequency range in megahertz (MHz or one million hertz) for each of the existing television and radio stations, and for the proposed project.

The project would install a new antenna system able to accommodate a second set of broadcasts from the ten existing television stations on Sutro Tower. The second set of antennas would broadcast DTV signals from Sutro Tower in addition to the NTSC signals until such time as the FCC required termination of the NTSC signals (see project sponsor's objectives, above). Rather than the analog signal currently used by the broadcast industry, DTV codes the signal information into a digital system, similar to that used in a computer. The



Source: AAA



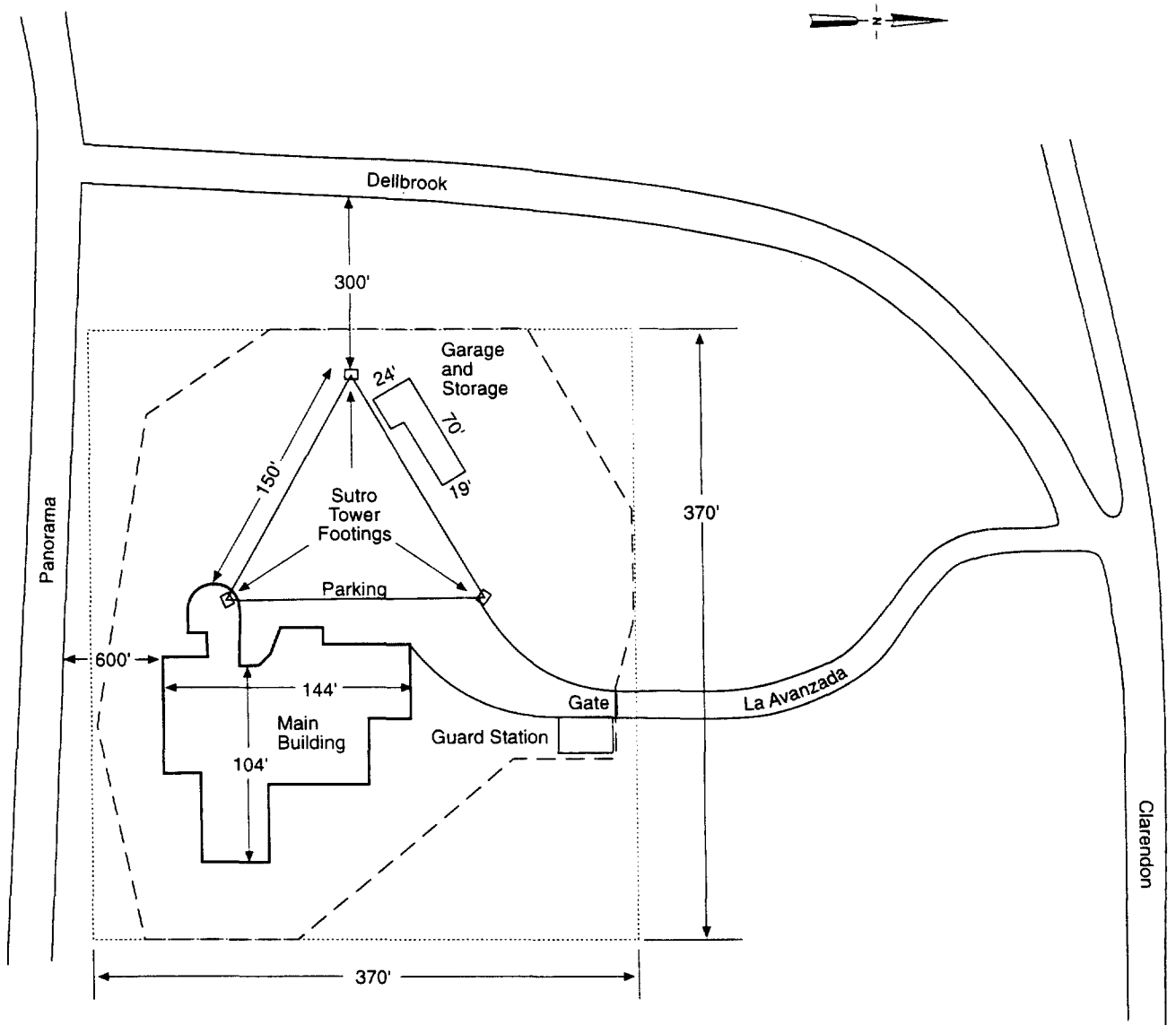
Project No.
961005NA

Sutro Tower DTV EIR

Woodward-Clyde Consultants

SITE LOCATION

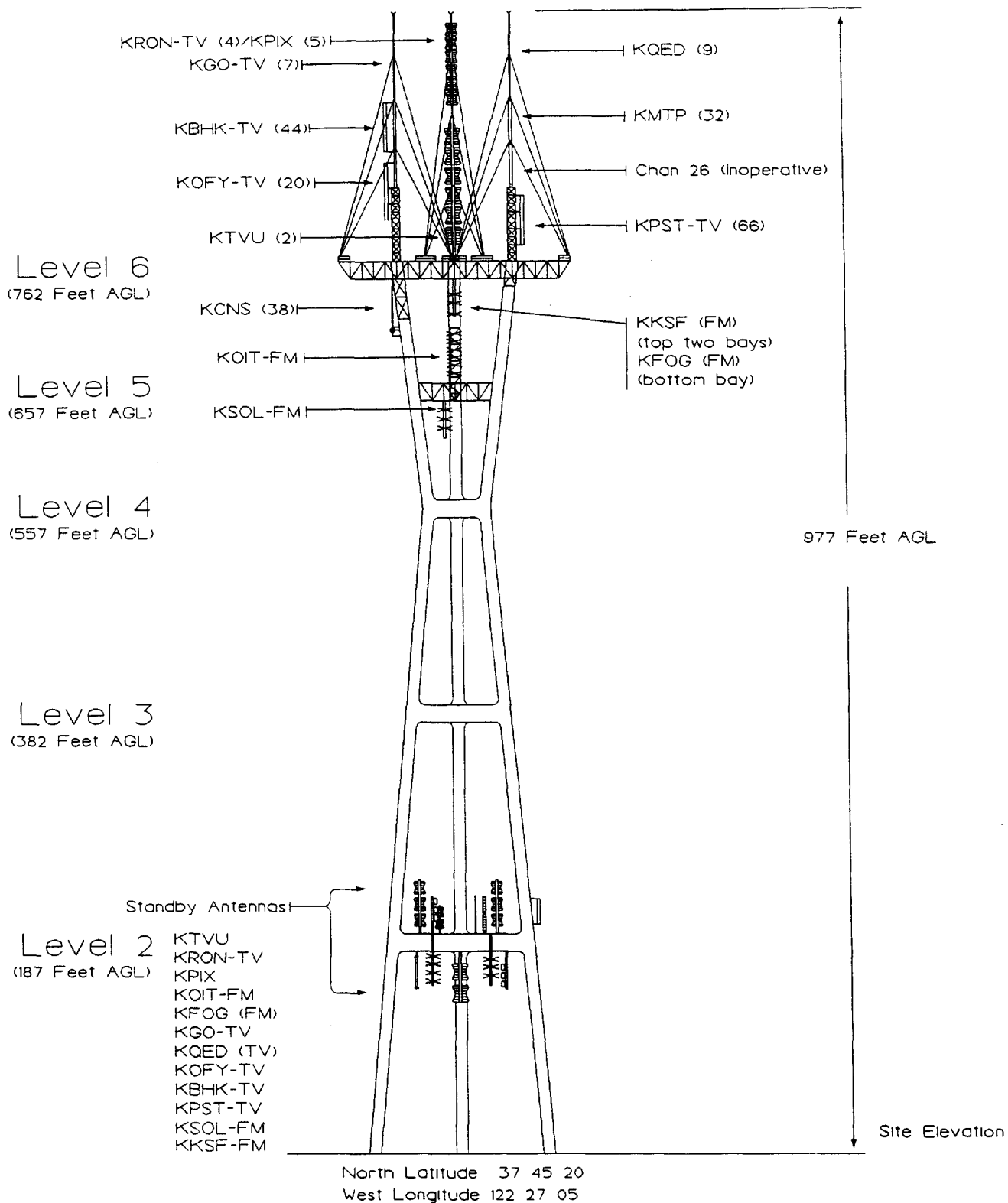
Figure
1



(not to scale)

Source: Sutro Tower, Inc.

| | | | |
|----------------------------|---------------------|-----------|-------------|
| Project No. 961005NA | Sutro Tower DTV EIR | SITE PLAN | Figure 2 |
| Woodward-Clyde Consultants | | | |



Note: AGL = Above Ground Level

(not to scale)

Source: Sutro Tower, Inc.

| | | | |
|----------------------------|---------------------|-----------------------------------|-------------|
| Project No. 961005NA | Sutro Tower DTV EIR | SUTRO TOWER BROADCASTING ANTENNAS | Figure 3 |
| Woodward-Clyde Consultants | | | |

TABLE 1
EXISTING AND PROPOSED SUTRO TOWER BROADCAST STATIONS

| | Call Letters | Channel Number | Frequency (MHz) | Location at Tower | Effective Radiated Power |
|---|--------------------------|----------------|-----------------|-------------------|--------------------------|
| Existing VHF TV Stations | | | | | |
| | KTVU | 2 | 54-60 | West Stack | 100 kW |
| | KRON | 4 | 66-72 | West Stack | 100 kW |
| | KPIX | 5 | 76-82 | West Stack | 100 kW |
| | KGO | 7 | 174-180 | South Stack | 316 kW |
| | KQED | 9 | 186-192 | North Stack | 316 kW |
| Existing UHF TV Stations | | | | | |
| | KOFY | 20 | 506-512 | South Stack | 3,470 kW |
| | KMTP | 32 | 578-584 | North Stack | 1,333 kW |
| | KCNS | 38 | 614-620 | Below level 6 | 5,000 kW |
| | KBHK | 44 | 650-656 | South Stack | 5,000 kW |
| | KPST | 66 | 782-788 | North Stack | 3,470 kW |
| Existing FM Radio Stations | | | | | |
| | KOIT | 243 | 96.5 | Above level 5 | 33.0 kW |
| | KSOL | 255 | 98.9 | Below level 5 | 6.0 kW |
| | KKSF | 279 | 103.7 | Below level 6 | 7.8 kW |
| | KFOG | 283 | 104.5 | Below level 6 | 7.9 kW |
| Proposed DTV Stations | | | | | |
| | KRON | 57 | 728-734 | DTV Pole | 1,000 kW* |
| | KBHK | 45 | 656-662 | DTV Pole | 197 kW* |
| | KOFY | 19 | 500-506 | DTV Pole | 141 kW* |
| | KPIX | 28 | 554-560 | DTV Pole | 1,000 kW* |
| | KMTP | 33 | 584-590 | DTV Pole | 50 kW* |
| | KTVU | 56 | 722-728 | DTV Pole | 1,000 kW* |
| | KCNS | 39 | 620-626 | DTV Pole | 209 kW* |
| | KPST | 30 | 566-572 | DTV Pole | 56 kW* |
| | KQED | 34 | 590-596 | DTV Pole | 736 kW* |
| | KGO | 24 | 530-536 | DTV Pole | 594 kW* |
| Existing Ancillary Transmitting Stations | | | | | |
| | Microwave (about 20) | | 2-23 GHz | Various | 1-10 W |
| | Private Radio (about 40) | | 160-950 MHz | Various | 10-100 W |

* This is the authorized power. Some stations may run at lower power levels.

Notes: MHz = megahertz; GHz = gigahertz; W = watts; kW = kilowatts

Source: Sutro Tower, Inc., 1997; Hammett & Edison, 1997

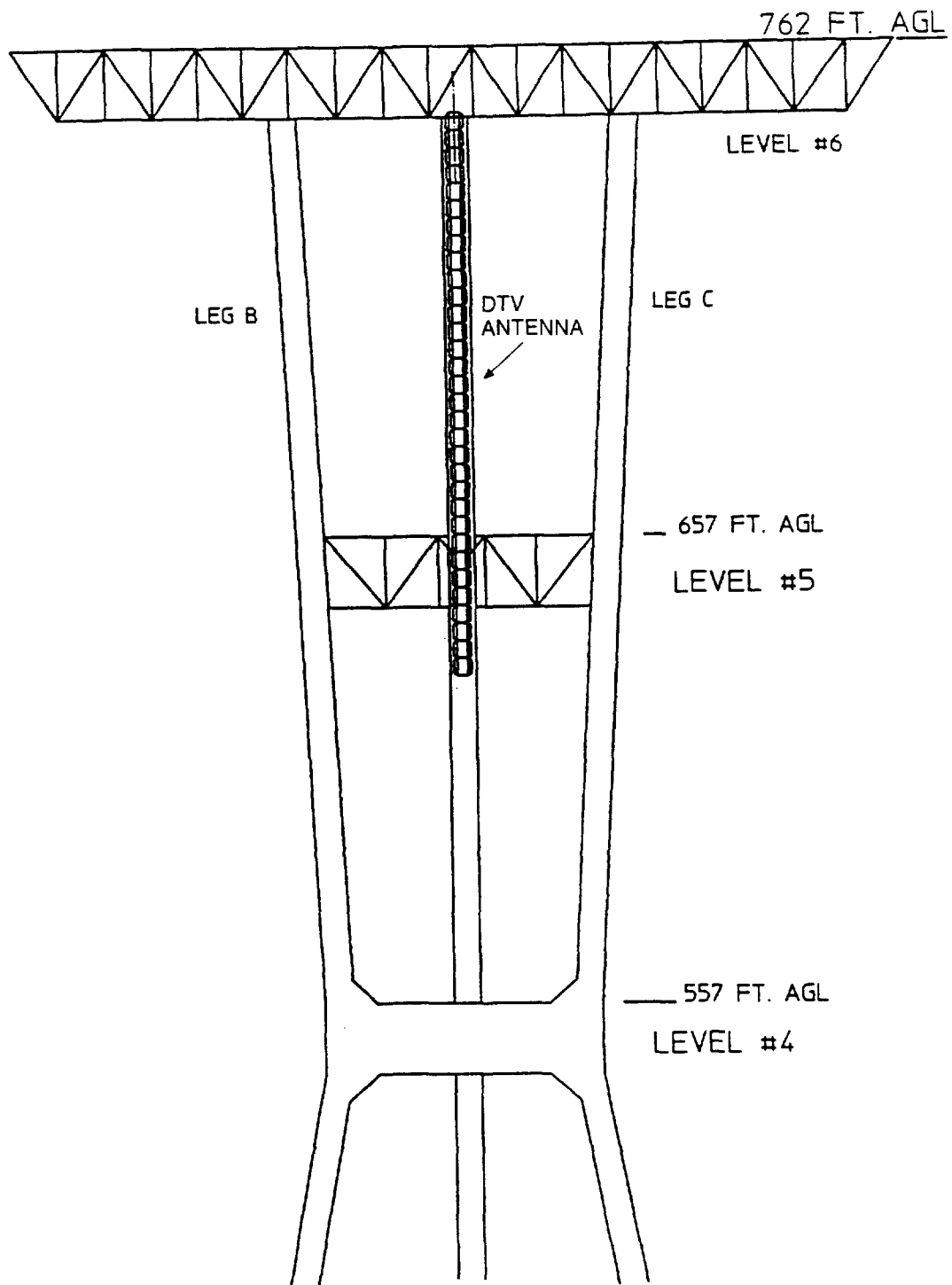
2.0 Project Description

DTV system can carry the same type of programming as seen on TV today, and could also carry additional data services. DTV would also allow stations to send multiple programs simultaneously on a single channel. With DTV, additional signals in the FCC DTV range of 500 to 734 megahertz (MHz) radio frequency (RF) range would be broadcast from Sutro Tower, during the period of overlapping DTV and NTSC broadcasts (estimated to be until May 2006). Thereafter, the DTV signals would replace the existing NTSC signals.

Figure 4 shows the location of the proposed DTV antennas on Sutro Tower. A new 125-foot long beam about 3 feet wide by 3 feet deep would be attached to Level 6 of the tower about 755 feet above the base of the tower. The beam would be attached to the east face of Sutro Tower and would hang down vertically to a height of about 630 feet above ground level. The antennas would be attached to this new beam. The beam would be brought to the site by truck, already manufactured, in three sections. Each of the three sections would be hoisted up the tower and installed in place. No power impact tools are anticipated to be necessary for the installation process.

In addition to the regular radiofrequency emissions from Sutro Tower, most of the stations have "stand-by" auxiliary antennas on the tower. These auxiliary antennas can be used to broadcast TV signals if the regular antennas are unable to operate. Currently these antennas are used on an infrequent basis (about six times a year for about one-half hour between 9 a.m. and noon) when work needs to be done on the main antennas. The auxiliary antennas are mounted at the first rung (Level 2) of Sutro Tower and generally emit a fraction of the power of the main antennas, although three auxiliary antennas emit more power. No additional auxiliary antennas are proposed at this time. If auxiliary antennas are installed in the future, the frequencies broadcast would be identical to frequencies broadcast from the main antennas, but the power densities would be lower.

No demolition would occur on site.



(not to scale)

Source: Sutro Tower, Inc.

| | | | |
|----------------------------|---------------------|------------------------|-------------|
| Project No. 961005NA | Sutro Tower DTV EIR | DTV ANTENNA FRONT VIEW | Figure 4 |
| Woodward-Clyde Consultants | | | |

2.4 PROJECT SCHEDULE, COST, AND APPROVAL REQUIREMENTS

2.4.1 Schedule and Costs

The project sponsor expects environmental review and project review to be completed in September 1997. If the project is approved and city permits issued, the new set of antennas could be delivered to the site within about one week. The new set of antennas could be installed on the tower in about six weeks. Estimated installing cost of the new antennas would be about 400,000 dollars (1997).

2.4.2 Approvals

Following publication of the Draft EIR, there will be a written comment period and a public hearing before the City Planning Commission to solicit public comment on the adequacy and accuracy of information presented in the Draft EIR. Following that comment period, responses to written and oral comments will be prepared. The EIR will be revised as appropriate and presented to the City Planning Commission for certification as to its accuracy, objectiveness, and completeness. No local permits may be issued before the EIR is certified as final.

The project will require an electrical permit by the City and County of San Francisco to increase electrical use by the project. An additional onsite electrical transformer would need to be added to each of two 12 kilovolt feeder lines that currently serve the tower. (PG&E, 1996)

The project may also require additional building and electrical permits to allow Sutro Tower tenants to make necessary improvement in their leased space to accommodate DTV equipment.

No amendments to the existing conditional use to operate the tower would be required pursuant to Zoning Administrator determinations of 1988 and 1996. However, pursuant to City Planning Commission Resolution No. 11399, adopted July 14, 1988, the City Planning Commission would hold a public hearing to review the proposed project under its Discretionary Review authority.